

PATENT

Atty. Dkt. No. APPM004714.C1/CPI/WCVD/PJS

THE PENDING CLAIMS:

1-15. (Canceled)

16. (Previously Presented) A method for forming a nucleation layer and a bulk deposition layer on a substrate having a plurality of vias, said method comprising:

forming a refractory metal nucleation layer by serially exposing said substrate to first and second reactive gases, wherein the refractory metal nucleation layer covers the plurality of vias; and

forming a bulk deposition layer on said nucleation layer by employing vapor deposition to bulk deposit a refractory metal contained in one of said first and second reactive gases, wherein the bulk deposition layer fills the plurality of vias, and wherein the refractory metal is tungsten.

17. (Previously Presented) The method of claim 16 wherein the bulk deposition layer is deposited employing chemical vapor deposition.

18. (Previously Presented) The method of claim 17 wherein the refractory metal nucleation layer and the bulk deposition layer are deposited in the same chamber.

19. (Previously Presented) The method of claim 16 wherein the first reactive gas is diborane (B_2H_6).

20. (Previously Presented) The method of claim 19 wherein the second reactive gas is WF_6 .

21-22. (Canceled)

23. (Previously Presented) A method for forming a nucleation layer and a bulk deposition layer on a substrate disposed in a processing chamber, said method comprising:

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forming a refractory metal nucleation layer by serially exposing said substrate to a boron-containing compound and a tungsten-containing compound, wherein serially exposing said substrate to the boron-containing compound and the tungsten-containing compound comprises:

exposing said substrate to the boron-containing compound for a period of time;

exposing said substrate to a pulse of the tungsten-containing compound;

and

exposing said substrate to a pulse of the boron-containing compound; and
forming a bulk deposition layer on said nucleation layer by employing vapor deposition to bulk deposit a refractory metal contained in one of said boron-containing compound and tungsten-containing compound.

24-25. (Canceled)

26. (Previously Presented) A method for forming a nucleation layer and a bulk deposition layer on a substrate disposed in a processing chamber, said method comprising:

forming a refractory metal nucleation layer by serially exposing said substrate to a boron-containing compound and a tungsten-containing compound, wherein serially exposing said substrate to the boron-containing compound and the tungsten-containing compound comprises:

exposing said substrate to a pulse of the boron-containing compound;

exposing said substrate to a pulse of the tungsten-containing compound;

and

exposing said substrate to the boron-containing compound for a period of time; and

forming a bulk deposition layer on said nucleation layer by employing vapor deposition to bulk deposit a refractory metal contained in one of said boron-containing compound and the tungsten-containing compound.

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27-33. (Canceled)